UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,030	11/30/2001	Volodymyr V. Kindratenko	8350.0444-00	6132

7590 11/18/2003	EXAMINER

Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005-3315

EXAMINER
WHELPLEY, MICHAEL V

ART UNIT	PAPER NUMBER
2671	

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/997,030	KINDRATENKO ET AL.
	Examiner	**Art Unit**	
	Michael V Whelpley	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-27_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-27_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)	4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5)☐ Notice of Informal Patent Application (PTO-152)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6)☐ Other: .

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-3, 5, and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated

by Karron et al. (US Patent 5,898,793). Karron describes a system and method of

rendering the surface structures of a solid object.

3.   With regard to Claim 1, Karron describes storing an image that consists of a 3-

dimensional signal pattern representing at least one physical property of a 3-

dimensional object that has an internal structure (Col 6 Lines 8-13). The image is

stored within a regularly spaced gird pattern consisting of voxels with eight vertex

values and six faces (Col 4 Lines 33-39). The outer perimeter of the image is detected

by determining the intersections of the signal pattern and voxel faces (Col 4 Lines 50-

53).

4.   With regard to Claims 2 and 8, Karron describes the voxels that make up the 3-

dimensional grid as having six sides (Col 4 Lines 34-39).

5.   With regard to Claim 3, Karron describes rendering an image of the surface

structure (Col 5 Lines 12-13).

6.   With regard to Claim 5, Karron describes the selection of a grid location within or

on the surface structure of the image (Col 4 Lines 43-46). An identifier is stored for

each element of the image that intersects with the selected voxel (Col 4 Lines 50-58).

These steps are repeated for all voxels intersecting the surface structure of the image

(Col 5 Lines 1-11).

7.   With regard to Claim 9, Karron describes a voxel neighborhood that is used to

determine the order in which voxels are checked for intersection with the image. (Fig

5A). In order to implement the method described, the outer boundary of the grid must

be separated from the outer boundary of the image by at least one row of cells.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 10-12, 14, 17-18, 19-21, 23, and 26-27 are rejected under 35 U.S.C.

103(a) as being unpatentable over Karron.

10.   With regard to Claims 10-12, 14, and 17-18, the rationale for Claims 1-3, 5, and

8-9 applies equally. It would have been obvious to those of ordinary skill in the art at

the time the invention was made to embody the system and method of Karron as an

apparatus comprising a network device having a memory containing a program that

includes modules for carrying out tasks because it is well known that any method of

image processing may be embodied as a device to carry out that method.

11.   With regard to Claims 19-21, 23, and 26-27, the rationale for Claims 1-3, 5, and

8-9 applies equally. It would have been obvious to those of ordinary skill in the art at

the time the invention was made to embody the system and method of Karron as a

machine-readable storage device having instructions for carrying out the tasks because

it is well known that any method of image processing may be embodied as a device to

carry out that method.

12.   Claims 4, 6, 13, 15, 22, and 24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Karron as applied to Claims 1, 10, and 19 above, and further in view

of Cline et al. (US Patent 4,710,876). Cline describes a method and apparatus for

determining the surface structure of a graphical object, in which a grid composed of

voxels is superimposed upon an image of the object, and the intersections of the grid

and image are tested.

13.   With regard to Claim 4, Cline describes the process of intersection testing, which

is done sequentially for each voxel in the grid (Col 17 Lines 14-18). It would have been

obvious to those of ordinary skill in the art at the time the invention was made to use the

scanning method taught by Cline in the method taught by Karron because the

sequential testing of each cell in the grid is a simple way to make sure all cells are

checked for intersections.

14.   With regard to Claim 6, Karron describes a method whereby the voxels sharing a

voxel face with an intersected voxel are checked for intersections (Col 6 Lines 40-44). It

would have been obvious to those of ordinary skill in the art at the time the invention

was made to apply the adjacent voxel checking of Karron to the sequential testing of

Cline in the method described by Karron because checking for intersections at adjacent

voxels is a simple way to sequentially check all voxels for intersections.

15.   With regard to Claims 13 and 15, the rationale for the rejection of Claims 4 and 6 applies equally, in light of the rejection of Claims 10-12, 14, and 17-18 above.

16.   With regard to Claims 22 and 24, the rationale for the rejection of Claims 4 and 6 applies equally, in light of the rejection of Claims 19-21, 23, and 26-27 above.

17.   Claims 7, 16, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karron as applied to Claims 1, 10, and 19 above, and further in view of Borrel et al. (US Patent 5,448,686). Borrel describes a method of detecting the outer perimeter of an image by superimposing a grid composed of regularly spaced cells over the image and testing the cells for intersections.

18.   With regard to Claim 7, Borrel describes the ability of a user to select different levels of resolution by choosing different cell sizes for the grid (Col 9 Lines 7-12). It would have been obvious to those of ordinary skill in the art at the time the invention was made to apply the user-input grid size taught by Borrel to the method taught by Karron because a user will desire to have different levels of resolution in different applications.

19.   With regard to Claim 16, the rationale for the rejection of Claim 7 applies equally, in light of the rejection of Claims 10-12, 14, and 17-18 above.

20.   With regard to Claim 25, the rationale for the rejection of Claim 7 applies equally, in light of the rejection of Claims 19-21, 23, and 26-27 above.
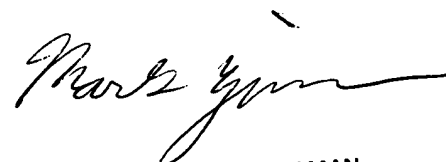
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Whelpley whose telephone number is (703) 305-5584. The examiner can normally be reached on 8:30-5, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on (703) 305-3900. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-9724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9724.

MW

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600